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Research Area: GIE

Project Title: Facilitate international spring and winter bread wheat germplasm and information exchange through CIMMYT.

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PROJECT 1 ABSTRACT

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The overall goal of this collaboration is to increase genetic resistance to Fusarium Head Blight (FHB) as quickly as possible in commercially grown USA bread wheat varieties and thus significantly increase the production and yield stability of wheat in the United States of America.

Specifically, the objectives of the project are:

- to provide agronomically suitable FHB resistant germplasm to USWBSI collaborators through pre-breeding activities using synthetic wheats and major USA cultivars;
- to conduct a world-wide search for and acquisition of suitable FHB resistant germplasm and to make this available to the US Wheat and Barley Scab Initiative;
- to test germplasm at FHB hot-spot(s) in Mexico and through the CIMMYT International Wheat Improvement Network.

Researchers at CIMMYT are working on incorporating genetic resistance for FHB into commercially grown bread wheat varieties; specifically identifying and combining resistant types I (penetration), II (spread), III (low toxin content) and IV (tolerance, good grain filling in the presence of the disease). Sources of resistance from genetic sources have been identified in Brazil, Japan, Argentina, China and Romania, Ukraine, South Korea and Uruguay. These will be evaluated by CIMMYT in Mexico, China and Uruguay and included in the breeding programs. Additional promising sources of Type II resistance have been identified in synthetic wheats.

The best sources of FHB resistance have been crossed with USA parents and segregating populations will be screened for *Septoria tritici* and *Puccinia striiformis* during the 2003 cycle in Toluca, Mexico. The most promising F6 germplasm will be shipped to US researchers in November-December 2003. On-going pre-breeding activities involving spring wheat cultivars from the USA introgressed with FHB resistant CIMMYT sources will continue. Web-access of global International Wheat Improvement Network data is anticipated during this project year. This data is currently available via CD-ROM.

The project aims to develop as quickly as possible, FHB resistant germplasm that will minimize the threat of Fusarium head blight to the producers, processors and consumers of bread wheat.